

Anterior Cervical Discectomy:

New and Improved

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The evolution of minimally invasive technology certainly has allowed a return of the anterior cervical discectomy (ACD) in a new and improved package. It is quicker, easier and less expensive. The framework on which the new an improved ACD is based includes a small anterior annulotomy with cannula-supported instrumentation, fluoroscopy and endoscopy-assisted intradiscal positioning, and mechanical as well as laser assisted disc removal and annular modulation.

This new ACD procedure is done in a standard outpatient operating suite. The patient is placed under general endotracheal anesthesia and “wired” for intraoperative spinal monitoring (EMG & SEP). The patient is given perioperative Decadron and prophylactic IV antibiotics. The patient is then positioned supine in gentle cervical extension, similar to the position used for cervical discography. The C-arm is then used to confirm satisfactory imaging in both AP and lateral projections. Sometimes, this requires gentle caudal wrist traction in order to image the lowest cervical segments.

The anterior neck is then prepped and draped in a sterile fashion. Under fluoroscopic guidance and with digital pressure retracting the carotid sheath, the appropriate disc level is identified. The overlying skin area is anesthetized with Marcaine 0.25% with epinephrine. A short transverse incision is then made in the right anterior neck region anterior to the sternocleidomastoid muscle, while holding retraction on the carotid sheath and providing a safe interval between the paratracheal and carotid sheath structures. This incision is then bluntly dissected to allow for placement of the discogram needle into the safe interval.

Utilizing digital pressure, the trochar is then placed down onto the anterolateral aspect of the intended disc. This position is confirmed by AP and lateral radiographs. The discogram

needle is then placed into the central portion of the disc and once again satisfactory position is confirmed with fluoroscopy. With the position confirmed, Isovue in a 1:1 mixture with Lidocaine 1% without Epinephrine is then instilled into the interspace. This is done to identify any epidural leak and allow marking of the disc to help with directing and assessing the disc removal.

Then the hub is removed from the discogram needle and the 2.5 dilator is then placed over the needle/trochar. This is monitored under fluoroscopic guidance down into the anterolateral aspect of the annulus. The cannula and the dilator are both replaced, seating the cannula on the anterior annulus. The 2.5 trephine is then inserted into the interspace under fluoroscopic guidance providing an anterior annulotomy. The trephine and trochar are then removed. The 2.5 disc removal instrument (DRI) is then placed into the central portion of the disc. Position is once again confirmed with AP and lateral fluoroscopy. The 2.5 grasper is then utilized to remove the trephine annular core if not evacuated by DRI. Irrigation and aspiration of the disc with resection is then commenced and approximately 1-3 cc of disc material is collected in about 20-30 minutes of combined aspiration and cutting.

The discectomy is focused primarily in the posterior region of the interspace in the area of the predominant disc herniation and once a significant amount of dye and disc material is removed, then the graspers are placed into the interspace to remove any additional free fragments. Following this, the flexible LASE endoscope (Clarus Medical Systems, Inc., Minneapolis, MN, USA) is then placed into the interspace. The position is confirmed with fluoroscopy as well as under direct vision. Utilizing direct vision, the laser discoplasty is then accomplished with 800-1500 kilojoules utilizing the Holmium laser (New Star Lasers, Roseville,

CA, USA). Under the endoscopic visualization, it is possible to identify and treat the posterior annular fibers. Additional laser thermal modulation in the uncinata regions can further stabilize the segment and decrease discogenic neuroforaminal encroachment. Spinal monitoring is utilized continuously intraoperatively and this should confirm satisfactory response with no neurologic change identified.

The interspace is then irrigated and the instrumentation is removed. The wound is then cleaned with a saline soaked sponge and approximated with a 4-0 ethilon skin stitch while maintaining pressure in order to avoid any significant bleeding. The patient is then placed into a firm Philadelphia collar. The patient is then extubated and leaves the operating room awake and in the care of the anesthesiologist. (Figure 1.)

The ability to decompress the posterior disc space and not remove the majority of the thick anterior annulus is what differentiates this new and improved ACD from its open predecessor. The postoperative use of extension exercises and distraction collars is designed to further reduce the adverse sequelae of disc space collapse and segmental kyphotic positioning.

With the new and improved ACD, even if we can give our patients another five to ten years without fusion, this not only lessens the stresses on the adjacent segments, but also leaves open the possibility of functional prosthetic solutions that are most definitely on the horizon.

Best wishes to you and our patients. Enjoy.

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